

CASE REPORT

Successful treatment of left atrial disk thrombus on an Amplatzer atrial septal defect occluder with abciximab and heparin

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Acute device thrombosis is a rare but important complication after transcatheter atrial septal defect closure. In this case a mobile thrombus was noted on the left side of an Amplatzer atrial septal occluder after device release in a 12 year old boy with an uncomplicated atrial septal defect. The thrombus was successfully treated with an infusion of heparin and the glycoprotein IIa/IIIb receptor antagonist abciximab. Transoesophageal ultrasound performed the following day showed complete resolution of the clot. There are no reports to guide treatment of acute thrombosis in this setting. This combination of treatments was effective without complication in this case.

Transcatheter closure of atrial septal defects is increasingly common. Of the reported complications of the technique, thrombus formation, particularly on the left side of the occlusion device, is especially feared. To prevent this most operators anticoagulate during the procedure and administer longer term antiplatelet treatment. As a result, reports of important thrombotic complications are rare. Consequently there is little experience with the treatment of acute device thrombosis.

We report early treatment and resolution of left atrial disk thrombosis in a 12 year old patient with a combination of heparin and the glycoprotein IIb/IIIa receptor antagonist abciximab.

CASE REPORT

A 12 year old boy underwent percutaneous closure of a secundum atrial septal defect under general anaesthetic. He had been pretreated with aspirin and had 100 U/kg of heparin at the start of the procedure. A transoesophageal echocardiogram (TOE) showed acceptable margins and closure was attempted with a 16 mm Amplatzer atrial septal occluder (AGA Medical Corporation, Golden Valley, Minnesota, USA). The device position was unstable because of a floppy posterior margin and the device was retrieved. Successful closure was achieved with a 20 mm device although retrieval and repositioning were required on five occasions.

After release of the device a pedunculated 8 mm thrombus attached to the centre of the left sided disk was seen on TOE (video 1) (to view video footage visit the *Heart* website—<http://www.heartjnl.com/supplemental>). There was particular concern about embolisation given the highly mobile appearance of the clot. Treatment with abciximab according to the adult guidelines (bolus of 0.25 mg/kg followed by 0.1 mg/kg given as an infusion over 12 hours) in addition to a continuous infusion of heparin (maintaining the activated partial thromboplastin time ratio > 2.5) was started.

TOE performed the following day showed a very small strand of thrombus attached to the centre of the left atrial

disk. Heparin was discontinued and the patient was discharged on aspirin and clopidogrel. There were no complications as a result of the treatment.

A further TOE performed two weeks after the procedure showed complete resolution of the thrombus.

DISCUSSION

Despite initial fears, reports are rare of intra-atrial thrombosis after atrial septal defect closure with the Amplatzer atrial septal occluder. When thrombosis does occur there is little information to guide correct management. Acar and colleagues¹ and Chessa and associates² successfully treated individual patients with left atrial thrombus with heparin alone. Neither patient experienced important complications, but the thrombus took six months to resolve and therefore potentially presented an ongoing risk. Vanderheyden and colleagues³ treated a patient with device associated thrombosis after patent foramen ovale closure. These authors used a combination of recombinant tissue plasminogen activator and a glycoprotein IIb/IIIa inhibitor. Despite the clot not being detected until six months after device deployment they achieved complete thrombus resolution within 48 hours of treatment.

Glycoprotein IIb/IIIa antagonists are potent platelet inhibitors and are widely used in adult practice. Their reported use so far in children has been restricted to patients with coronary artery aneurysms resulting from Kawasaki's disease in which no complications have been described.

The mobility and potential friability of acute thrombus in the setting of percutaneous atrial septal defect closure implies a high risk of embolisation early after device closure and supports an aggressive approach to management. In this case treatment with a glycoprotein IIb/IIIa platelet antagonist in combination with heparin quickly resolved device associated thrombosis, avoiding either surgical retrieval or ongoing risk of thromboembolism.

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